Practice: 374 - Farmstead Energy Improvement

Scenario # 1 Lighting - CFL

Scenario Description: **Missouri**

To install dimmable CFLs to replace incandescent lamps on a one-for-one basis. Light fixtures do not have to be replaced. A typical poultry house has 48 fixtures. CFL requirements: minimum 8 Watt, 4100 Kelvin, dimmable, grow-out bulb; industrial grade; suitably protected from dirt accumulation. In high humidity environments or areas subject to wash down, gasketted or weatherproof housings are required to prevent corrosion and premature failure.

Before Practice Situation:

An inefficient lighting system such as one using incandescent lamps has been identified by an on-farm energy audit.

After Practice Situation:

More efficient lighting is provided by Compact Fluorescent Lamps (CFLs) in order to reduce energy use as evidenced by the energy audit. Associated practices/activities: 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure:

Each lamp replaced

Scenario Typical Size:	1	Each	Tot Unit Cost	$18.91

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Lighting, bulb, CFL, 8 watt	1	Each	$15.31	$15.31
Labor	General Labor	0.167	Hour	$21.56	$3.60
				Total Cost:	$18.91

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP-NOFEI	$14.18	EQIP-HUNOFEI	$17.02

Practice: 374 - Farmstead Energy Improvement

Scenario # 2 Lighting - LED

Scenario Description: **Missouri**

To install dimmable LEDs to replace incandescent lamps on a one-for-one basis. Light fixtures do not have to be replaced. A typical poultry house has 48 fixtures. LED requirements: minimum 6 Watt, 3700 Kelvin, dimmable, grow-out bulb; industrial grade; suitably protected from dirt accumulation. In high humidity environments or areas subject to wash down, gasketted or weatherproof housings are required to prevent corrosion and premature failure.

Before Practice Situation:

An inefficient lighting system such as one using incandescent lamps has been identified by an on-farm energy audit.

After Practice Situation:

More efficient lighting is provided by Light-Emitting Diode (LED) lamps in order to reduce energy use as evidenced by the energy audit.Associated practices/activities: 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure:

Each lamp replaced

Scenario Typical Size:	1	Each	Tot Unit Cost	$35.58

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Lighting, bulb, LED, 6 watt	1	Each	$31.98	$31.98
Labor	General Labor	0.167	Hour	$21.56	$3.60
				Total Cost:	$35.58

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP-NOFEI	$26.69	EQIP-HUNOFEI	$32.02

Practice: 374 - Farmstead Energy Improvement

Scenario # 3 **Lighting - Linear Fluorescent**

Scenario Description: **Missouri**

The lighting system consists of a four-foot, three-lamp fixture with a single electronic ballast. The high-efficiency lighting system uses high-efficiency T8 fluorescent lamps. Associated materials for installation of replacement fixtures are included. Appropriate disposal of existing lamps, ballasts and other materials is required.

Before Practice Situation:

Inefficient lighting (such as incandescent or T12 fluorescent tubes driven by magnetic ballasts) as evidenced by an on-farm energy audit.

After Practice Situation:

High-efficiency lighting system which reduces energy use. The new lighting equipment will provide suitable light levels and reduce overall power requirements (kW) compared to the existing lighting system as evidenced by the energy audit. Associated practices/activities: may include 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure:

Each fixture replaced

Scenario Typical Size:	1	Each	Tot Unit Cost	$434.86

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Lighting, fixture, Fluorescent, 75 watt	1	Each	$372.35	$372.35
Labor	Skilled Labor	1	Hour	$31.91	$31.91
Mobilization	Mobilization, Skilled labor	1	Hour	$30.60	$30.60
				Total Cost:	$434.86

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP-NOFEI	$326.15	EQIP-HUNOFEI	$391.37

Practice: 374 - Farmstead Energy Improvement

Scenario # 4 **Ventilation - Exhaust**

Scenario Description: **Missouri**

Replacement of a conventional exhaust fan with high volume, low speed, efficient exhaust fan. Fans being installed should be models previously tested by BESS Lab or the Air Movement and Control Association and be in top 20 percentile of fans tested. Practice certification will be through receipts and pictures from the applicant. Typical scenario includes the replacement of a 48" fan.

Before Practice Situation:

Inefficient ventilation in an agricultural building.

After Practice Situation:

High-efficiency ventilation system which reduces energy use. The new ventilation equipment will provide suitable air quality and reduce overall power requirements (kW) compared to the existing ventilation system as evidenced in an energy audit. Associated practices/activities: may include 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure:

Each

Scenario Typical Size:	1	Each	Tot Unit Cost	$1,394.90

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Fan, exhaust, 48" High Efficiency	1	Each	$1,268.57	$1,268.57
Labor	Skilled Labor	3	Hour	$31.91	$95.73
Mobilization	Mobilization, Skilled labor	1	Hour	$30.60	$30.60
				Total Cost:	$1,394.90

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP-NOFEI	$1,046.18	EQIP-HUNOFEI	$1,255.41

Practice: 374 - Farmstead Energy Improvement

Scenario # 5 **Ventilation - Horizontal Air Flow**

Scenario Description: **Missouri**

A system of fans are installed to create a horizontal air circulation pattern; the new system promotes efficient heat and moisture distribution. In a typical 10,000 square foot greenhouse, 10 HAF fans are needed. Fan performance meets Energy Audit efficiency criteria as tested by AMCA or BESS Labs.

Before Practice Situation:

Inefficent air circulation system in a greenhouse.

After Practice Situation:

High-efficiency air circulation system which reduces energy use. The new equipment will provide suitable air quality and reduce overall power requirements (kW) compared to the existing system as evidenced in an energy audit. Associated practices/activities: may include 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure:

Each

Scenario Typical Size:	1	Each	Tot Unit Cost	$289.87

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Fan, HAF, 1/10 to 1/15 HP	1	Each	$195.45	$195.45
Labor	Skilled Labor	2	Hour	$31.91	$63.82
Mobilization	Mobilization, Skilled labor	1	Hour	$30.60	$30.60
				Total Cost:	$289.87

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP-NOFEI	$217.40	EQIP-HUNOFEI	$260.88

Practice: 374 - Farmstead Energy Improvement

Scenario # 6 Plate Cooler

Scenario Description: **Missouri**

The installation of all stainless steel dual pass plate cooler, type 316 stainless steel. Practice certification will be through receipts and pictures from the applicant.

Before Practice Situation:

Inefficient milk cooling (minimal pre-cooling of milk before entering the bulk tank).

After Practice Situation:

High-efficiency milk cooling system which reduces energy use. The new milk cooling equipment will pre-cool the milk and reduce overall power requirements (kW) compared to the existing milk cooling system (where most of the cooling was accomplished in the bulk tank) as evidenced in an energy audit. Associated practices/activities: may include 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure:

Each

Scenario Typical Size:	1	Each	Tot Unit Cost	$12,413.77

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Plate Cooler, 750 - 999 gal/hr capacity	1	Each	$12,158.49	$12,158.49
Labor	Skilled Labor	8	Hour	$31.91	$255.28
				Total Cost:	$12,413.77

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP-NOFEI	$9,310.33	EQIP-HUNOFEI	$11,172.39

Practice: 374 - Farmstead Energy Improvement

Scenario # 7 Scroll Compressor

Scenario Description: **Missouri**

Install a new scroll compressor, associated controls, wiring, and materials to retrofit an existing refrigeration system. A new condenser is not included in this typical scenario. Typical scenario includes a new 5 horsepower scroll compressor.

Before Practice Situation:

Inefficient reciprocating compressor as a key component of the refrigeration system used to cool milk. The compressor is a critical part of a milk cooling system, affecting milk quality, system reliability, and system efficiency.

After Practice Situation:

A more efficient scroll compressor, which will reduce energy use, is evidenced by the energy audit. A comparably sized scroll compressor provides refrigeration capacity at a higher efficiency than a reciprocating compressor. Newer scroll compressor systems typically reduce electricity use by 15 to 25 percent compared to reciprocating compressors. Associated practices/activities: may include 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure:

Horse Power

Scenario Typical Size:	5	Horse Power	Tot Unit Cost	$375.53

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Scroll Compressor - 5 HP	1	Horsepower	$1,750.00	$1,750.00
Labor	Skilled Labor	4	Hour	$31.91	$127.64
				Total Cost:	$1,877.64

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP-NOFEI	$281.65	EQIP-HUNOFEI	$337.98

Practice: 374 - Farmstead Energy Improvement

Scenario # 8 Variable Speed Drive

Scenario Description: **Missouri**

The typical scenario consists of a variable speed drive (VSD) and appurtances, such as hook-ups, control panels, wiring, control blocks, filters, switches, pads, etc. attached to an electric motor used to drive a ventilation fan, irrigation pumps, vacuum pump, or similar equipment involved with agricultural production. The motor size, on which the VSD is added, is larger than 5 HP.

Before Practice Situation:

The system is inefficient when a motor operates at constant speed to satisfy a load which varies as to flow rate and/or pressure requirements.

After Practice Situation:

An on-farm energy audit has determined that energy use can be reduced through use of a VSD to control electric motors. After the VSD is applied, the motor speed can be adjusted to reduce power requirements and better match varied flow or pressure requirements. Associated practices/activities: may include 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure:

HP

Scenario Typical Size:	50	Horse Power	Tot Unit Cost	$137.15

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Variable Speed Drive, 10 HP	12.5	Horsepower	$150.00	$1,875.00
Materials	Variable Speed Drive, 50 HP	12.5	Horsepower	$146.80	$1,835.00
Materials	Variable Speed Drive, 100 HP	12.5	Horsepower	$101.00	$1,262.50
Materials	Variable Speed Drive, 200 HP	12.5	Horsepower	$107.50	$1,343.75
Labor	Skilled Labor	16	Hour	$31.91	$510.56
Mobilization	Mobilization, Skilled labor	1	Hour	$30.60	$30.60
				Total Cost:	$6,857.41

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP-NOFEI	$102.86	EQIP-HUNOFEI	$123.43

Practice: 374 - Farmstead Energy Improvement

Scenario # 9 Motor Upgrade > 100 HP

Scenario Description: **Missouri**

The typical scenario consists of replacing an existing electric motor used to drive a ventilation fan, irrigation pumps, vacuum pump, or similar equipment involved with agricultural production with a new, high efficiency motor. The motor size is larger than 100 horsepower.

Before Practice Situation:

The system is inefficient with a standard efficiency motor.

After Practice Situation:

An on-farm energy audit has determined that energy use can be reduced through use of a NEMA premium motor. Associated practices/activities may include: 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure:

hp

Scenario Typical Size:	200	Horse Power	Tot Unit Cost	$83.09

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Motor, electric, NEMA Premium, 200 HP	1	Each	$16,107.25	$16,107.25
Labor	Skilled Labor	16	Hour	$31.91	$510.56
				Total Cost:	$16,617.81

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP-NOFEI	$62.32	EQIP-HUNOFEI	$74.78

Practice: 374 - Farmstead Energy Improvement

Scenario # 10 Motor Upgrade 10 - 100 HP

Scenario Description: **Missouri**

The typical scenario consists of replacing an existing electric motor used to drive a ventilation fan, irrigation pumps, vacuum pump, or similar equipment involved with agricultural production with a new, high efficiency motor. The motor size is equal to or larger than 10 and less than or equal to 100 horsepower.

Before Practice Situation:

The system is inefficient with a standard efficiency motor.

After Practice Situation:

An on-farm energy audit has determined that energy use can be reduced through use of a NEMA premium motor. Associated practices/activities may include: 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure:

hp

Scenario Typical Size:	50	Horse Power	Tot Unit Cost	$75.09

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Motor, electric, NEMA Premium, 50 HP	1	Each	$3,499.31	$3,499.31
Labor	Skilled Labor	8	Hour	$31.91	$255.28
				Total Cost:	$3,754.59

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP-NOFEI	$56.32	EQIP-HUNOFEI	$67.58

Practice: 374 - Farmstead Energy Improvement

Scenario # 11 Motor Upgrade > 1 and < 10 HP

Scenario Description: **Missouri**

The typical scenario consists of replacing an existing electric motor used to drive a ventilation fan, irrigation pumps, vacuum pump, or similar equipment involved with agricultural production with a new, high efficiency motor. The motor size is larger than 1 and less than 10 horsepower.

Before Practice Situation:

The system is inefficient with a standard efficiency motor.

After Practice Situation:

An on-farm energy audit has determined that energy use can be reduced through use of a NEMA premium motor. Associated practices/activities may include: 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure:

hp

Scenario Typical Size:	5	Horse Power	Tot Unit Cost	$180.98

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Motor, electric, NEMA Premium, 5 HP	1	Each	$777.25	$777.25
Labor	Skilled Labor	4	Hour	$31.91	$127.64
				Total Cost:	$904.89

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP-NOFEI	$135.73	EQIP-HUNOFEI	$162.88

Practice: 374 - Farmstead Energy Improvement

Scenario # 12 Motor Upgrade ≤ 1 HP

Scenario Description: **Missouri**

The typical scenario consists of replacing an existing electric motor used to drive a ventilation fan, irrigation pumps, vacuum pump, or similar equipment involved with agricultural production with a new, high efficiency motor. The motor size is less than or equal to 1 horsepower.

Before Practice Situation:

The system is inefficient with a standard efficiency motor.

After Practice Situation:

An on-farm energy audit has determined that energy use can be reduced through use of a NEMA premium motor. Associated practices/activities may include: 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure:

hp

Scenario Typical Size:	1	Horse Power	Tot Unit Cost	$573.16

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Motor, electric, NEMA Premium, 1 HP	1	Each	$445.52	$445.52
Labor	Skilled Labor	4	Hour	$31.91	$127.64
				Total Cost:	$573.16

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP-NOFEI	$429.87	EQIP-HUNOFEI	$515.84

Practice: 374 - Farmstead Energy Improvement

Scenario # 13 Heating - Radiant Tube

Scenario Description: **Missouri**

Replace "pancake" Brood Heaters in a poultry house with Radiant Tube Heaters. Replacement will require the materials and labor to remove existing heating system, re-plumb gas lines, cables and wench system to retrofit new radiant tube heaters, and miscellaneous items to complete the installation. Alternate acceptable radiant heating systems can include radiant brooders and quad radiant systems as evidenced by the energy audit. The typical scenario consists of the replacement of 28 brood heaters with 6 radiant tube heaters.

Before Practice Situation:

Inefficient heat distribution equipment, such as conventional "pancake" brood heaters. The Pancake brooder, mounted at a low installation height, primarily warms the air. They provide a one-to-two foot perimeter at desired temperatures around each brooder. A large number of brooders are required to cover a significant percent of floor space. As the warmed air naturally rises it loses effectiveness for poultry on the ground.

After Practice Situation:

Energy use is reduced through installation of a more efficient heater. Radiant tube heaters primarily warm objects within a direct line of sight (similar to the sun or an open fire). Air temperature is of relatively little importance for a radiant heating systems to be effective. As a result, radiant sytems are typically installed 5' or more above the floor level. This height extends the distribution of the radiant heat over a larger area than is possible with pancake style heaters. A roughly 16' diameter radiant heat zone heats over twice that of a convential pancake brooder. Associated practices/activities may include: 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure:

Each

Scenario Typical Size:	6	Each	Tot Unit Cost	$1,314.35

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Heater, radiant tube	6	Each	$1,224.16	$7,344.96
Labor	Skilled Labor	16	Hour	$31.91	$510.56
Mobilization	Mobilization, Skilled labor	1	Hour	$30.60	$30.60
				Total Cost:	$7,886.12

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP-NOFEI	$985.77	EQIP-HUNOFEI	$1,182.92

Practice: 374 - Farmstead Energy Improvement

Scenario # 14 Heater - High Efficient

Scenario Description: **Missouri**

Replace existing low efficiency heaters with new high efficiency heaters. High-efficiency heating systems include any heating unit with efficiency rating of 80%+ for fuel oil and 90%+ for natural gas and propane. Applications may be air heating/building environment and hydronic (boiler) heating for agricultural operations, including under bench, or root zone heating. An alternative to heater replacement might be the addition of climate control system and electronic temperature controls with +/- 1 degree F differential, to reduce the annual run time.

Before Practice Situation:

Buildings heated with low efficiency heaters or heaters without proper electronic climate controls

After Practice Situation:

Higher efficiency heaters reduce energy consumption, energy costs, and GHG emissions. These replacement systems can be fueled by natural gas, propane, or fuel oil. Associated practices/activities: 122-AgEMP - HQ and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure:

Rating

Scenario Typical Size:	750	1000 BTU/Hour	Tot Unit Cost	$11.75

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Heater, high efficiency	750	1,000 BTU/Hour	$11.03	$8,272.50
Labor	Skilled Labor	16	Hour	$31.91	$510.56
Mobilization	Mobilization, Skilled labor	1	Hour	$30.60	$30.60
				Total Cost:	$8,813.66

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP-NOFEI	$8.81	EQIP-HUNOFEI	$10.58

Practice: 374 - Farmstead Energy Improvement

Scenario # 15 Attic Insulation

Scenario Description: **Missouri**

A typical scenario is the installation of a minimum 4-in depth of cellulose insulation in attic or ceiling to address energy loss. The increased insulation reduces seasonal heat loss and heat gain which reduces the respective need for heating and cooling equipment to operate.

Before Practice Situation:

A poultry house with an inefficient building envelope with limited attic insulation.

After Practice Situation:

A more effective and efficient building envelope can be created through addition of, or increased, attic insulation. Associated practices/activities: 122-AgEMP - HQ and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure:

Square Feet of Attic Insulated

Scenario Typical Size:	20000	Square Foot	Tot Unit Cost	$0.65

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Insulation, Fiberglass or cellulose, R-15	20000	Square Foot	$0.65	$13,000.00
				Total Cost:	$13,000.00

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP-NOFEI	$0.49	EQIP-HUNOFEI	$0.59

Practice: 374 - Farmstead Energy Improvement

Scenario # 16 Wall Insulation

Scenario Description: **Missouri**

Enclose both sidewalls and endwalls from ceiling to floor in one of two manners: 1) metal exterior, 3.5" fiberglass batts (R-11), vapor barrier, & interior plywood or OSB sheathing, or 2) closed-cell polyurethane foam application (minimum 1" thickness (R-7) of 2.5 lbs/cu.ft. or higher density, (3.0 or higher density preferred) with a form of physical protective barrier on lower 2' (may be 6 lbs/cu.ft. or higher density 1/8" thick foam, or treated lumber). Based on a 40' x 500' poultry house.

Before Practice Situation:

A poultry house with an inefficient building envelope with limited wall insulation.

After Practice Situation:

A more effective and efficient building envelope can be created through addition of, or increased, insulation. Associated practices/activities: may include 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure:

Square Feet of Wall Insulated

Scenario Typical Size:	20000	Square Foot	Tot Unit Cost	$2.65

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Insulation, polyurethane, R-7, with sheathing	10000	Square Foot	$0.97	$9,700.00
Materials	Insulation, Panel, R-11 with sheathing	10000	Square Foot	$4.32	$43,200.00
				Total Cost:	$52,900.00

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP-NOFEI	$1.98	EQIP-HUNOFEI	$2.38

Practice: 374 - Farmstead Energy Improvement

Scenario # 17 Sealant

Scenario Description: **Missouri**

A typical scenario is sealing the gaps between walls, gables, ceiling, etc. in a poultry house or greenhouse. Sealing is performed by a professional contractor, not merely use of spray foam from a can. The unit basis of payment in this scenario is each house based on 2400 linear feet of gap.

Before Practice Situation:

An agricultural facility with an inefficient building envelope with gaps between walls, ceiling, etc. for a total of 2400 linear feet.

After Practice Situation:

A more effective and efficient building envelope can be created through interior sealing of the exterior walls at the footer plate, eaves, ridge cap, and gable ends. The sealant reduces seasonal heat loss and heat gain due to infiltration which reduces the respective need for heating and cooling equipment to operate. Associated practices/activities: may include 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure:

Each house with estimated 2400 lf of gap

Scenario Typical Size:	2400	Foot	Tot Unit Cost	$1.13

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Sealant	2400	Foot	$1.13	$2,712.00
				Total Cost:	$2,712.00

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP-NOFEI	$0.85	EQIP-HUNOFEI	$1.02

Practice: 374 - Farmstead Energy Improvement

Scenario # 18 Greenhouse

Scenario Description: **Missouri**

A mechanical automated system consisting of a drive motor, support cables, controls, and shade material, or thermal blanket which may be woven, knitted, or non-woven strips of aluminum fiber, polyethylene, nylon or other synthetic material.

Before Practice Situation:

Heating and cooling of an existing greenhouse is inefficient due to excessive heat loss and/or heat gain and the fact that a greater volume of air is being heated or cooled than is necessary.

After Practice Situation:

The greenhouse is fitted with a mechanical automated controlled energy screen installed truss-to-truss or gutter-to-gutter, with side screens as necessary, reducing heat loss and/or gain in the greenhouse. Associated practices/activities: may include 122-AgEMP - HQ, and other activities within 374-Farmstead Energy Improvement. The resource concern is inefficient use of energy in the farm operation which increases dependence on non-renewable energy sources and can be addressed through improved energy efficiency. Any improvements are based on a Type 2 energy audit meeting the requirements of ASABE S612.

Scenario Feature Measure:

Square Feet of Blanket

Scenario Typical Size:	25000	Square Foot	Tot Unit Cost	$2.02

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Thermal blanket 10,001 - 50,000 square foot	25000	Square Foot	$2.00	$50,000.00
Labor	Skilled Labor	16	Hour	$31.91	$510.56
Mobilization	Mobilization, Skilled labor	1	Hour	$30.60	$30.60
				Total Cost:	$50,541.16

Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP-NOFEI	$1.52	EQIP-HUNOFEI	$1.82